

The earthwork training program Power Point presentation can be found on the ([R.O.A.D.S.](#)) page of our internal WEB. ([Earthwork Training.PPT](#))

My main purpose in contacting each of you is that I am finding more and more occurrences of both internal and external designers not understanding earthwork calculations nor computing these calculations correctly. In some instances it may seem “minimal” to some but in other instances it has an enormous impact.

EXAMPLE

Designers Computations

Unadjusted Cut 4077 cy
Unadjusted Fill 3142 cy

$$[3142 - (4077 * (1 - 0.25))] / (1 - 0.25)$$

113 CY Borrow

Total Excavation 4077
Total Borrow 113
Total Earthwork 4077 + 113 = 4190 cy

Per Topps 2434-1

4,190 CY < 100,000 CY therefore Pay Item is **Grading Complete**

Actual Computations

Unadjusted Cut 4077 cy
Unadjusted Fill 3142 cy
Total Earthwork 4077 + 3142 = 7,219

Per Topps 2434-1

7,219 < 100,000 CY therefore Pay Item is still **Grading Complete**

In the above case the damage was minimal. However in my next example you can see that the effects of someone not calculating earthwork correctly can be costly to the Department and the Taxpayer. The first error we were able to catch in the Preconstruction Phase. Sadly enough, we were unable to catch the 2nd example until the Construction Phase and will result in a hefty allotment request.

EXAMPLE

The quantity in the plans was calculated from subtracting the fill qty. (embankment) from the CAICE reports from the cut qty. (unclassified) from the CAICE reports. The results of their calculations were put in the final plans as the Unclassified Quantity. This is an incorrect process to use as well. The Unclassified Quantity in the plans should have been the cut (unclassified) quantity from the CAICE reports. From the price of the Unclassified, looks almost like the contractor may have known how to calculate earthwork as well. ☺

	Unclassified QTY.	Unit Cost	Total Cost
PLAN QUANTITY	487,325.00	\$15.00	7,309,875.00
CAICE REPORTS	1,006,522.68	\$15.00	15,097,840.20
Additional Funds Needed	-519,197.68	\$15.00	\$7,787,965.20

If there is anything that any of you can possible do to prevent these situations from happing again—perhaps another statewide earthwork course—it would surely be appreciated on this end.